

These specimens show:

- (a) Glumes equal or more or less unequal, in the latter case either the upper or the lower glume the longer; all variations to be seen in one and the same panicle; the length varies from 9 to 12 mm. in 8149, and 9 to 13.5 mm. in 13459.
  - (b) Lemma, column and awn nearly in a straight line (in immature spikelets) to variously bent and geniculate with respect to one another; lemma shorter than or as long as the glumes; awn straight or gently curved; the lemma varies in length from 6.5 to 13 mm. (usually); the column is 4.5-7 mm. long; the (central) awn varies from 9 to 15 mm. long.
  - (c) The lateral awns vary greatly; when well-developed up to 4 mm. long, very often greatly reduced or one or both entirely wanting. Figs. 9-12 of the plate illustrate stages in the reduction of the lateral awns in different spikelets from a single specimen; fig. 12 is that described for *Streptachne stipoides* R.Br., while fig. 9 represents the state found in the type of *Aristida utilis* F.M.Bail.
12. In one and the same panicle of many specimens of particularly Blake 8149 and 13459 occur spikelets which match those of the type-specimen of *Aristida utilis* (figs. 2 and 9) and other spikelets agreeing with all the available data concerning the type of *Streptachne stipoides* (figs. 3 and 12).

From the above data there seems no doubt whatsoever that *Aristida utilis* F.M.Bail. and *Streptachne stipoides* R.Br. are conspecific. In general the longer the panicle the greater the tendency to produce prominently 3-awned lemmas, and the smaller the panicle the greater the tendency for the greater number of spikelets to have the lateral awns much reduced or absent. As a rule the panicle is about as long as the remainder of the culm. It is noteworthy that the panicles of the type of *Streptachne* are according to Bentham 5-6 in. long\* while the usual length in *A. utilis* is at least twice this.

Banks and Solander were at Endeavour River between June 17th and August 5th, 1770, an unfavourable time of the year for collecting grasses in this region. I visited the area at the same season (July 30th to August 2nd) in 1943 and found *Aristida utilis* very abundant, but the plants had shed nearly all their florets. A search for plants without lateral awns was undertaken, and it was evident that a considerable variation occurred. Only a very few specimens in over-mature condition or with spikelets arrested in development were procurable, and though some spikelets have very tiny lateral awns there are none with them entirely absent. The type-specimens of *A. utilis* from the same locality were also collected rather late in the season (May). So it is possible that none of these specimens gives a true idea of the species.

The generic position of the species has now to be considered. Hughes, l.c., has given sufficient reason for not uniting *Streptachne* with *Stipa*; the absence of an articulation between awn and lemma is exclusive, besides the frequent presence of lateral awns, which was

\* Mrs. Chase writes me that in the United States National Herbarium there is a tracing of these plants sent by Miss Hughes, and the panicles measure 23 and 24 cm. long, the two lower branches of each 6.5 and 7 cm. long.

unknown to her. As Domin, l.c., has pointed out, it is not possible to separate *Streptachne* from *Aristida* on the character of the reduced lateral awns, as there is a complete series of species in which the lateral awns are more and more reduced until they completely disappear. He reduces *Streptachne* to a section of *Aristida*. Henrard, op. cit. lviii. 142, discusses the question again and after mentioning some American species of *Aristida* referred to *Streptachne* by Humboldt, Bonpland and Kunth, states "If we compare these species with the genus, described by BROWN, it is impossible to find differences in the spikelet-characters and we can find transitions between plants with short lateral awns and others where the lateral awns are quite obsolete and absent"; on p. 143 he goes on "The section *Streptachne* is not a very natural one and it is impossible to limit it sharply. It is probably better to unite *Streptachne* and *Chaetaria*, but for practical reasons I have separated them in this work."

To the above observations it may be added that the general appearance of the species is that of *Aristida* (as was noted by Brown), the appearance, texture and nervature of the glumes and lemmas are quite those of this genus, as is also the structure of the awns. The small palea and furrowed grain are likewise found in undoubted species of *Aristida*. The column is frequently bent away from the lower part of the lemma, and this feature appears not to be found in other sections of the genus, but it is not constant even in the type of *Streptachne stipoides*. The column of this species is a prolongation of the lemma proper, with 3 nerves running one into each awn.

There are undoubted species of *Aristida* in Queensland with such a column between the body of the lemma and the awns, but all have unfurrowed lemmas with convolute margins; they are *A. psammophila* Henr., *A. macroclada* Henr., *A. Schultzii* Mez, *A. Warburgii* Mez, *A. intricata* S. T. Blake, *A. latifolia* Domin, *A. holathera* Domin and *A. pernicioso* Domin. Of these *A. pernicioso* rather closely resembles *Aristida utilis* in foliage, in the elongated trailing uppermost internode, structure of the panicle, and in the texture, nervature and more or less in the shape of the glumes; the lateral awns, too, are decidedly shorter than the central awn. The points of resemblance to *Aristida* are so many and so important, while the two points of difference—the reduced lateral awns and the oblique column—are so inconstant in expression, that there seems no doubt that Domin and Henrard are right in treating *Streptachne stipoides* R.Br. as a species of *Aristida*.

Since *Streptachne stipoides* R.Br. and *Aristida utilis* F.M.Bail. are to be regarded as conspecific, the following data must be considered before it is possible to decide the legitimate name of the species under *Aristida*:

1. When *Streptachne stipoides* is transferred to *Aristida* the epithet *stipoides* becomes illegitimate in the new position owing to the earlier homonyms *Aristida stipoides* Lam. Tab. Encycl. & Meth. 157 (1791) and *A. stipoides* R.Br. Prodr. 174 (1810).
2. F. Mueller, in Journ. & Proc. Roy. Soc. N.S. Wales xv. 237 (1882) cites *Streptachne* R.Br. as a synonym of *Stipa* L. but without remark and without transferring any species.

3. F. Mueller in First Census 133 (1882) has the following entry under *Stipa*:  
 S. *Streptachne*, F.v.M. in journ. R.S. of N.S.W. 237 (1881)....  
 Q.—B.f. VII, 572.
4. Domin, in Biblioth. Bot. xx. heft 85, 342 (1915) transfers the species to *Aristida* as *A. streptachne* n. nom. citing *Streptachne stipoides* R.Br. Prodr. 174 (1810) and *Stipa Streptachne* F.Muell. in Journ. & Proc. Roy Soc. N.S. Wales xiv. 237 (1881)\*; First Census 133 (1882) . . . etc.
5. Mueller's reference in the First Census to Journ. & Proc. N.S. Wales xv. has no nomenclatural significance, for there is no reference, expressed or implied, to the combination *Stipa Streptachne* nor to the species *Streptachne stipoides*. The formula "Q. B.f. VII, 572" in the First Census means that the species mentioned occurs in Queensland and was described in Bentham's Flora Australiensis vii. 572. The only Queensland plant described by Bentham on this page is *Streptachne stipoides* R.Br. where a reference is given to R.Br. Prodr. 174†. According to some recent interpretations of Art. 37 of the International Rules by Airy-Shaw (Kew Bull. 1938, p. 256) and Sprague (Kew Bull. 1939, pp. 322-3) Mueller's formula must be regarded as an indirect reference to *Streptachne stipoides* R.Br. Prodr. 174, and this would validate the publication of the combination *Stipa Streptachne* F.Muell.
6. Though *Stipa Streptachne* F.Muell. is a valid combination, it is illegitimate, since the epithet *stipoides* should have been used, this having priority (as an epithet in the required position) and had not previously been used under *Stipa* (Art. 54).
7. According to Art. 60, the publication of an epithet in an illegitimate combination must not be taken into consideration for purposes of priority.
8. According to Art. 69, Domin was at liberty to use the epithet *Streptachne* when transferring the species to *Aristida* (since the epithet *stipoides* under *Aristida* would produce an illegitimate combination, namely a later homonym) though he was not obliged to do so, but the combination *Aristida streptachne* then has to be treated as a *new name* (as was done by Domin), not as a new combination (as was done by Henrard), so that the date of the epithet would date from the combination under *Aristida*, namely 1915.
9. The epithet in *Aristida utilis* dates from the date of publication of this combination, namely 1907.
10. So long as *Streptachne stipoides* and *Aristida utilis* are considered conspecific, *Aristida utilis* must be accepted as the legitimate name of the species.

\* This volume is xv., the journal for the year 1881, published in 1882, so that Mueller's citation of merely the year 1881 is misleading; Domin added the number of the volume published in 1881, apparently without checking the reference.

† Miss J. W. Vickery drew my attention to this nomenclatural significance of Mueller's formula.

Following is the revised synonymy and description of the species:

***Aristida utilis*** F.M.Bail. in Queensl. Agric. Journ. xviii. 340 (1907), Compreh. Catal. 622 (1913), but not the reference and figure in Queensl. Agric. Journ. xxx. 316, t.46 (1913)\*; Domin in Biblioth. Bot. xx. heft 85, 341 and t.15, f.15-17 (1915); Henr. Meded. Rijks Herb. Leiden liv.B, 651 (1928), lviii. 143-4, t.55 (1929).

*Streptachne stipoides* R.Br. Prodr. 174 (1810); Benth. Fl. Austral. vii. 572 (1878); F.M.Bail. Queensl. Fl. vi. 1878 (1902), Compreh. Catal. 623 (1913); Hughes, Kew Bull. 1922, 302 (1922); not *Aristida stipoides* Lam. nor *A. stipoides* R.Br.

*Stipa Streptachne* F.Muell. First Census, 133 (1882), Sec. Census 223 (1889); F.M.Bail. Syn. Queensl. Fl. 650 (1883), Catal. Pl. Queensl. 56 (1890); *nomen illegit.*

*Aristida streptachne* Domin in Biblioth. Bot. xx. heft 85, 342 (1915). Henr. Meded. Rijks Herb. Leiden liv.B, 597 (1928), lviii. 147, t.57 (1929).

A closely tufted perennial grass with intravaginal innovations. Culms usually oblique to more or less straggling, rarely more or less erect, usually straight in the lower part, including the panicle usually 6-10 dm. long, very slender, terete, simple or sparsely branched, 3-5-noded, the nodes not prominent, the uppermost internode very long and up to 45 cm. long, finely striate, scabrid but glabrous, the others more or less subequal but irregular, densely pilose with appressed rather long silky hairs. Leaf-sheaths usually shorter or the lowermost longer than the internodes, tight, terete, striate, minutely scaberulous, sometimes with a few long fine hairs near the margin in the lower part and the scarcely prominent nodes, otherwise glabrous; ligule a minutely but densely ciliolate rim in all about 0.25 mm. long; auricles indistinct, more or less bearded; collar glabrous, smooth; blades more or less flexuous with the old ones strongly so and more or less coiled and persistent, tapering to a filiform point, at first conduplicate-terete, soon becoming flat or somewhat concave, the upper surface and margins decidedly scaberulous and sometimes with a few long fine hairs towards the base, the lower surface less distinctly scaberulous to nearly smooth, for the most part 10-20 cm. long, 1-1.4 mm. wide, the uppermost often not much shorter than those below. Panicle long-exserted, rather scanty, narrow, contracted to rather loose, occupying about half the length of the plant; common axis about 5-8-noded, very slender, semi-terete, striolate, scaberulous below, more scabrous above, glabrous except for a few hairs (sometimes very short) at the axils of the branches; primary branches solitary or binate, the longer (when binate) with the spikelets included about as long as the internodes of the axis, filiform-trigonus, suberect or slightly spreading, straight, scabrous, naked for some distance when binate or if solitary then sparsely divided from close to the base, up to 8.5 cm. long, each bearing with its divisions up to about 10 spikelets; pedicels filiform-trigonus, slightly thickened at tip, scabrous, sometimes with a few long fine white hairs, the lateral ones about 1.5-5 mm. long, the terminal ones longer, up to 13 mm. long. Spikelets purplish to pallid, not much gaping. Glumes subequal or one or the other distinctly the longer though rarely by so much as 2 mm., glabrous, rather firm, straight, narrow-lanceolate, shortly awned, one or the other or sometimes both narrowly contracted or even minutely

\* These notes and figure refer to specimens of *A. pernicioso* Domin.

bilobed below the awnlet, otherwise acute, in all 9-13.5 though usually 10-12 mm. long including the awnlet of 1-3 mm.; lower glume 3- or sub-5-nerved, finely scabrous on the keel, elsewhere smooth or nearly so; upper glume 1-nerved, smooth. Lemma very slender, subcylindrical in outline, furrowed with involute margins, widest near base and slightly tapering upwards, finely punctulate, more or less distinctly scabrous in upper part and passing gradually into the column, together with the callus usually 7-12 mm. long; callus very small, about 0.5 mm. long, obtuse, rather densely bearded with fine hairs up to 1 mm. long. Column slender, scabrous, twisted, straight in direction, oblique or erect in relation to the body of the lemma, mostly 4.5-7 mm. long. Central (or only) awn slender, firm, straight or slightly curved, bent at an angle from the column, scabrous, mostly 9-15 mm. long; lateral awns extremely fine, very short, rarely more than 4 mm. though up to 6 mm. long, frequently minute or one or both absent. Palea 1 mm. long. Anthers 1.5 mm. long. Grain grooved throughout its length, about 5 mm. long and 0.3 mm. wide.

QUEENSLAND.—Cook District: Endeavour R., June-August, 1770, *Banks & Solander* (TYPE of *Streptachne stipoides*; drawings only seen); near Cooktown, May, 1907, *Webb* (TYPE of *Aristida utilis*); Cooktown, *Pollock*; Cooktown, on rocky hillsides in open forest, July 31st, 1943, *Blake* 15077; Chillagoe, on granite hill-slopes, ca. 1450 ft., April 4th, 1938, *Blake* 13632; Mt. Molloy, granite hills, 1200 ft., April 11th, 1932, *Brass* 2453; Mareeba, in rather bare places in Eucalyptus forest, ca. 1300 ft., March 27th, 1938, *Blake* 13459. North Kennedy District: Townsville, on Castle Hill, on exposed slopes and in Eucalyptus forest, March 22nd, 1935, *Blake* 8149, and on Castle Hill on sandy soil in open forest and on exposed slopes, June 7th, 1934, *Blake* 5946; between Stuart and Alligator Creek Meatworks, S. of Townsville, scattered or in societies, May, 1942, *L. S. Smith* T.2; Valley Creek near Proserpine, *Michael* 915. Port Curtis District: Rosedale, common on summit of granite mountain, May 10th, 1936, *Dovey* 829.

NEW GUINEA.—Papua: Near Moresby, in savanna-forest, August, 1944, *Hilton*.

Under the original description Bailey states that "the long smooth peduncles are being used in the manufacture of hats" but the grass is no longer being thus utilised. In *Compreh. Catal.* 622, Bailey gives "hat grass" as a vernacular name. No information is available as to its value for grazing, but it appears to be but little eaten, and grows only on poor country.

**A. spuria** *Domin*, l.c., 341 (1915), *Henr. op. cit.* liv.B 585 (1928) and lviii. 149-50, t.58 (1929) is a species very closely allied to *A. utilis* showing a parallel degree of reduction of the lateral awns. It differs from *A. utilis* by having glabrous internodes, fine convolute-setaceous leaves, shorter and more or less erect uppermost internodes, usually shorter panicle-branches and rather smaller glumes with shorter awnlets. On the average the glumes are 6-8 mm. long, subequal or one or the other very slightly the longer, with awnlets of up to 1 mm., the lower gradually very acute, the upper acute but somewhat contracted below the awnlet, the lower prominently 3- or 5-nerved and scabrous on the nerves, the upper 1-nerved somewhat scabrous on the nerve; the lemma is furrowed with involute margins, usually 8-10 mm. long, rarely slightly longer or shorter; the column is mostly 5-7 mm. long, rarely so short as 4 mm.;

the central awn is usually 9-13 mm. long, rarely so short as 7; the lateral awns are up to 4 mm. long, but are frequently very much smaller or insignificant to absent.

The type-specimens were collected by Domin on Castle Hill, Townsville, in February, 1910, but appear to have been seen by no other botanist. Henrard has taken *White* 1614 from the same locality as belonging to Domin's species; *Blake* 8349, also from the same locality, agrees. Domin describes the length of the spikelet-parts as follows: glumes 6-8 mm.; lemma with callus 6.5-7 mm.; column about 3.5 to nearly 4 mm.; central awn about 7.9-5 mm.; lateral awns up to 2 mm. Domin also describes his plants as annual, with the habit of *A. arenaria* Gaud. I think that there is no doubt that Henrard is correct in his interpretation of Domin's species, but it would appear that Domin had young plants with apparently smaller spikelets than usual, or perhaps they were not quite mature. I have found spikelets with the dimensions given by Domin, but the great majority have longer lemmas and awns, with the dimensions given above. The plants are perennial, frequently with branched culms.

The following collections are represented in the Queensland Herbarium:—

QUEENSLAND.—Burke District: Near source of Poison Creek, about 90 miles N. of Hughenden, in Eucalyptus (box) forest on stony ground, ca. 2750 ft., April 12th, 1935, *Blake* 8608. North Kennedy District: Castle Hill, Townsville, March, 1922, *White* 1614; Townsville, upper slopes of Castle Hill, among rocks, 700-1000 ft., March 30th, 1935, *Blake* 8349; Magnetic Island, on low sandy ridge in Eucalyptus forest, March 24th, 1935, *Blake* 8214; Hayman Island, common on hillsides in open Eucalyptus forest, June 11th, 1934, *White* 10223. Leichhardt District: Minerva, N. of Springsure, on open dry ridge on very shallow stony, reddish-brown silt-loam, ca. 1000 ft., March 8th, 1935, *Blake* 7971. Port Curtis District: Rosedale, not uncommon on summit of granite mountain, May 10th, 1936, *Dovey* 830. Moreton District: Little Mt. Edwards, tufted grass very common on bare trachyte slopes and among stunted *Leptospermums*, March 30th, 1934, *Everist* 547; Mt. Edwards, on cliffs above the northern side of the gorge, April 1st, 1934, *Everist* 609.

The other species which have been referred to *Streptachne* have been discussed by Hughes, l.c., p. 303. To these remarks it should be added that *S. ramosissima* (Trin.) Trin. and *S. verticillata* (Nees) Trin. & Rupr. rightly belong to the genus *Stipa* as was pointed out by Henrard, op. cit. lviii. 142, and not to *Muehlenbergia* as indicated by Hughes, l.c., nor to *Dichelachne* as earlier suggested by Hughes, op. cit. 1921, 28 (1921). Of the American species, I have seen specimens of *Aristida ternipes* Cav. (*Streptachne scabra* H.B.K., *S. tenuis* H.B.K.), *A. jorullensis* Kunth (*Streptachne pilosa* H.B.K.) and the comparable *A. Orcuttiana* Vasey. These represent an evolutionary trend of reduction from characteristic species of *Aristida* sect. *Chaetaria* parallel to what has taken place in the Australian group. The groups from the two continents are not particularly closely allied, and, for that matter, *A. Orcuttiana* appears not to be very closely allied to the other two American species.

*Streptachne indica* Buese ex De Vriese, Pl. Ind. Bat. Or. 99 (1856), Miq. Fl. Ind. Bat. iii. 751 (1859), from Java, was not mentioned by Domin, Hughes or Henrard, and I have found no further clue to its

identity. The characters given (taken from Miquel, l.c., apparently a copy of the original description) of "nodis pilosis," "spiculae basi fasciculo pilorum brevium cinctae," "valvula inferior glumis paullo brevior leviter bidentata et in aristam scabram . . . terminata," suggest a relationship remote from the species discussed above, and in the absence of the type-specimens it is useless to guess at what it might be. There is no mention of it in Koorders' *Exkursionsflora von Java* (1912).

Four points arise from the inquiry into the nomenclature of *Streptachne stipoides* under *Aristida*.

1. It does seem unfortunate that illegitimate though valid names are excluded from considerations of priority. A more logically practical method of dealing with matters of priority would seem to be along the lines suggested by Furtado (particularly in *Gardens' Bull., Straits Settlements*, xi. 1-30: 1939), according to which names are classified according to validity, priorability and legitimacy. Validly published names may be priorable whether they are legitimate or not, and on transfer to another genus the oldest valid epithet priorable in the new position must be employed and such a transfer becomes a new combination. If such a procedure were incorporated in the International Rules, *Stipa Streptachne* would be a priorable name, although illegitimate and its epithet would have to be taken into consideration when the species is transferred to *Aristida*. It would be then compulsory to use this epithet (dating from 1882) and the resulting *new combination A. Streptachne* (F.Muell.) Domin would be the legitimate name for the species.

2. Art. 44 states that "The name of a species . . . is not validly published unless it is accompanied (1) by a description of the group, or (2) by the citation of a previously and effectively published description of the group under another name, or (3) by a plate or figure with analyses showing essential characters; . . . ." The publication of the name of the species *Streptachne stipoides* does not conform to any of these conditions, for, as previously stated, (p. 11), the name is merely listed after the description of the genus. Yet the publication is quite unequivocal, is far more satisfying than many a "citation of a previously and effectively published description" and nobody seems ever to have questioned the validity of this form of publication. Art. 5—"In the absence of a relevant rule . . . established custom must be followed"—can be invoked, but surely such a case should be definitely covered by the Rules.

3. In the Rules, no limits are set as to the interpretation of a "citation of a previously and effectively published description." In the case of *Stipa Streptachne* F.Muell., validity is allowed merely because no other Queensland plant happens to be described on the cited page of the *Flora Australiensis*. Can a reference be valid if no name of a taxonomic group is cited? or again if there is no reference to the original description of a group?

4. Should validity be denied to the combination *Stipa Streptachne* F.Muell. in First Census, 133, on the grounds of absence of description and imperfect reference, attention must be paid to F. M. Bailey's *Syn. Queensl. Fl.* 650 (1883), where under *Stipa* four sentences evidently taken from Bentham's description of *Streptachne stipoides* follow the name *S. Streptachne* F.v.M. There is no other reference. According

to the letter of Art. 44, the provision of this description would validate the publication of the name *Stipa Streptachne*, but the position then arises that the publication of a name can be validated by reason of author having published a "description" of a species of which he had seen no specimen.

**Pheidochloa** *S. T. Blake*; genus novum affine *Eriachnae* R.Br., a qua gluma superiore inferiore duplo longiore, anthoeciis subteretibus antice profunde sulcatis callo angusto pungente praeditis, caryopsi angusta marginibus incurva itaque sulcata, culmi internodio penultimo brevissimo praecipue differt.

*Spiculae* a latere compressae, ambitu anguste lanceolatae, aristatae, vel in racemo vel in ramis paniculae depauperatae ortae; rhachilla brevis glabra, supra glumas et inter anthoecia disarticulans, supra haec haud producta. *Anthoecia* 2, contigua, a glumis oblecta, bisexualia, anguste fusiformia, antice sulcata; callus angustus, pungens, barbatus, pro ratione longus. *Glumae* persistentes, valde inaequales superior duplo longior, a latere visae oblique lanceolatae, acutae, muticae, vix carinatae, dorso herbaceo-membranaceae manifeste 7-nerves, marginibus hyalinae. *Lemmata* subsimilia, subteretia marginibus involuta, explanata oblonga obtusa, tenuiter cartilaginea, tenuiter 7-nervia, plus minusve pubescentia, apice integra in aristam longam scabram leviter flexuosam haud tortam desinentia. *Paleae* lineares, hyalinae, manifeste bicarinatae. *Lodiculae* 2, parvae, angustissime lineares, hyalinae. *Stamina* 2. *Ovarium* glabrum; styli distincti; stigmata plumosa, haud exserta. *Caryopsis* linearis marginibus incurva itaque antice sulcata; scutellum  $\frac{1}{3}$  caryopseos aequilongum; hilum lineare caryopsi fere aequilongum.—*Gramen* annuum, gracillimum, caespitosum, parvum; culmi sursum ramosi, internodio penultimo brevissimo; foliorum laminae setaceae, convolutae, prope basin angustatae, 7-nerves; ligulae ad seriem ciliorum brevium redactae.

Species unica, Queenslandiae tropicae incola.

**Pheidochloa gracilis** *S. T. Blake*; species nova, adhuc unica.

*Gramen* annuum, usque ad 30 cm. altum. *Culmi* fasciculati, filiformes, plus minusve flexuosi, obliqui vel erecti, plerumque 3-5-nodes raro 2- vel 6-nodes, glabri laevesque, e nodis superioribus ramosi, internodio penultimo quam ceteris (imo interdum excepto) brevior. *Folia* pauca; vaginae arctiusculae vel sursum admodum hiantes, teretes, striatae, glabrae, laeves, internodiis breviores vel superiores multo breviores; ligulae ad marginem brevissime ciliolatum redactae; laminae setaceae, convolutae, suberectae, strictae vel plus minusve recurvae, basin versus angustatae atque vaginis multo angustiores, 0.3-4 cm. longae, usque ad 0.5 mm. latae vel explanatae usque ad 0.9 mm. latae, apice obtusae, 7-nerves nervis subtus prominulis, marginibus incrassatae, subtus pilis paucis longis tenuibus e tuberculis ortis pro more ad margines prope basin praeditae, ceterae glabrae laevesque. *Inflorescentia* paniculata vel racemosa e spiculis 2-6 constructa, aristis exclusis 1.5-3.2 cm. longa, longe exserta; axis communis, ramis (ubi adsint), pedicellique trigono-filiformes, parce ciliata; rami infra pedicellos brevissimi, erecti; pedicelli sub apice leviter incrassati, erecti, terminales usque ad 5 mm. longi. *Spiculae* lineari-lanceolatae, tandem leviter hiantes, aristis exclusis 10-13 mm. longae, erectae appressaeque. *Glumae* pallidae, acutae, muticae, prominule 7-nerves, glabrae, laeves; inferior anguste ovata, 4.5-5 mm. longa; superior duplo longior, lanceolata, 9-11 mm. longa. *Anthoecia* contigua, lineari-fusiformia, antice



profunde sulcata. *Lemmata* pallida dorso lateribusque in majore parte breviter pubescentia, apicem versus glabra, nervis nonnullis saepe breviter setosa, callo incluso 3.7-4.5 mm. longa; callus angustissimus pungens, breviter barbatus, 1.1-1 mm. longus; arista purpurea, basi admodum constricta, setacea, admodum applanata, 3.3-3.8 cm. longa. *Paleae* muticae lemmatibus subaequilongae, inter carinas elevatas planae, glabrae. *Antherae* ovatae, minimae, 0.15-0.2 mm. longae. *Lodiculae* 0.5 mm. longae, tenuissimae. *Caryopsis* linearis, dorso convexa, 2 mm. longa.

QUEENSLAND.—Cook District: About 40 miles N.W. of Mungana, in *Melaleuca* forest on fine whitish sand, abundant, April 8th, 1938, *Blake* 13732 (TYPE); N. of Chillagoe, near Walsh R., in dwarf *Melaleuca* forest on sand, ca. 1000 ft., April 2nd, 1938, *Blake* 13592.

A delicate annual grass (plate II) with filiform culms, short setaceous leaves and long-exserted inflorescences of few, 2-flowered spikelets with long purple awns. Most culms bear a short floriferous branch from the penultimate node (topmost but one); the internode above (penultimate internode) is much shorter than those immediately below, often the shortest on the culm, and this feature gives a peculiar facies to the plant. Occasionally a branch is also borne at the antepenultimate node, and in this case the antepenultimate internode is rather shorter than the one immediately below, though much longer than the penultimate. The inflorescence, when consisting of up to 4 spikelets, is a raceme, but when 5 or 6 spikelets are present the lower one or two branches bear a shortly pedicellate lateral spikelet, so that a depauperate panicle is the result.

On account of the 2-flowered spikelets and the lemmas with a single terminal bristle-like awn this new genus is most closely allied to *Eriachne* R.Br., but the extraordinarily elongated upper glume (twice as long as the lower), the subterete florets deeply furrowed in front and with a pungent slender callus, the prominently inrolled (not merely incurved) margins of the lemma, the elevated keels of the palea and the peculiar very narrow grain are all quite distinctive features. The grain of *Eriachne*, so far as has been ascertained, is more or less obovate in outline and flat or nearly so on the anterior face. In *E. melicacea* F.Muell. the grain appears to be constantly concave along the anterior face, but it is very different from that of *Pheidochloa* which has the margins incurved leaving a very deep furrow and giving a crescentic-reniform appearance in transverse section. The lodicules are extremely fine and delicate. The anthers are extraordinarily small and are always to be found tangled up with the stigmatic hairs in mature spikelets; the spikelets are very evidently cleistogamous. Small anthers associated with cleistogamy have been found in *Eriachne trisetata* Nees, *E. Armitii* F.Muell. ex Benth., and *E. stipacea* F.Muell. var. *hirsuta* Hartley. Most species of this genus have relatively large anthers which are laterally exserted during anthesis; they are usually 3 in number, though 2 only in some of the small species such as *E. ciliata* R.Br. and *E. filiformis* Hartley. Vegetatively *Pheidochloa* differs from *Eriachne* (except *E. Dominii* Hartley) in the very short penultimate internode of the culm and in that the leaf-blade is decidedly narrowed to the base from shortly above, but this latter character is not readily discernible unless the leaf-blade is artificially unrolled and flattened out.

The position of the genus in the family is not clear, though *Eriachne* has usually been placed in the *Aveneae*. C. E. Hubbard (Hook Ic. Pl.

under t.3418: 1940) has pointed out that the *Aveneae* may be divided into two groups distinguished partly on the nature of the awn. In the typical group (*Aveneae* subtribe *Euavenae* Beck) the awn is dorsal and its column often subterete, or at least not flattened or laterally winged. The column is formed by the continuation of the middle nerve and not by the splitting of the lemma into three segments. On the other hand, in the second group (*Aveneae* subtribe *Danthonieae* Beck), the lemmas are usually two-lobed, and the awn when present arises in the sinus of the lobe. Here the column of the awn is flattened and its formation is due to the gradual splitting of the apex of the lemma into three segments.

*Eriachne* and *Pheidochloa* differ from each of these groups, for in these genera the awn is a continuation of the fusion of all the nerves of the unlobed lemma, and perhaps they are as well placed in the *Festuceae*.

The name *Pheidochloa* is derived from *φειδός*, sparing, thrifty; and *χλόα* grass. It refers to the scanty inflorescence, 2-flowered spikelets, the two minute anthers and the very fine and thin lodicules.

Both collections are from similar types of country—ill-drained sandy land supporting an open dwarf-tree community of *Melaleuca* spp. associated with chiefly small annual grasses and Cyperaceae belonging to the genera *Eriachne*, *Ectrosia*, *Heterachne*, *Schizachyrium*, *Thaumastochloa* and *Fimbristylis*.

#### EXPLANATION OF PLATES.

PLATE I.—*Aristida utilis* F.M.Bail. drawn from Blake 8149; figs. 2-12 from same specimen.

FIG. 1, plant, *natural size*; 2, 3, spikelets,  $\times 3$ , the former with "normal" glumes and well-developed lateral awns, the latter with "inverse" glumes and the lateral awns absent; 4-8, details of spikelet,  $\times 6$ :—4, 5, glume tips from two spikelets, *a*, upper, and *b*, lower; 6, lemma, front view; 7, palea; 8, flower with lodicules separated; 9-12, top of column with base of awn, from four spikelets, showing variation in development of lateral awns,  $\times 15$ .

PLATE II.—*Pheidochloa gracilis* S. T. Blake, gen. nov., sp. nov., drawn from Blake 13732 (type).

FIG. 1, plant, *natural size*; 2, ligule with top of leaf-sheath partly flattened and base of blade; 3, spikelet; 4, lower glume; 5, upper glume; 6, florets, side view, greater part of awns removed; 7, 8, floret from front and back respectively; 9, lemma, expanded, from the back; 10, palea from in front; 11, flower with the lodicules separated; 12, 13, grain from back and front respectively; 14, transverse section of grain; 15, diagram of spikelet.—Fig. 3  $\times 3$ ; figs. 2, 4-14  $\times 8$ .

#### ERRATUM.

For Plate II., fig. 15 read

